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REMARKS

Claims 1, 3, 4 and 6-14 are pending in this application. Claim 1 is the only independent claim.

By this amendment, claim 1 is amended for clarity.

Reconsideration in view of the above amendments and following remarks is respectfully solicited.

The Claims Satisfy The Requirements Of
35 U.S.C. §112, 2nd Paragraph

The Office Action rejects claim 1 under 35 U.S.C. §112, 2nd paragraph. This rejection is respectfully traversed.

Applicants respectfully submit that the amendment to claim 1 obviates the rejection of claim 1 under 35 U.S.C. §112, 2nd paragraph.

Accordingly, withdrawal of the rejection of claim 1 under 35 U.S.C. §112, 2nd paragraph is respectfully solicited.

The Claims Define Patentable Subject Matter

The Office Action makes the following rejection:

(1) claims 1, 3, 4 and 6-14 are rejected under 35 U.S.C. §103(a) as being unpatentable under U.S. Patent No. 6,556,243 to Dotsubo et al. (hereafter Dotsubo) in view of U.S. Patent No. 6,157,749 to Miyake (hereafter Miyake).

This rejection is respectfully traversed.

Applicants respectfully submit that the combination of Dotsubo and Miyake fail to teach or suggest each and every feature as set forth in the claimed invention.

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Specifically, claim 1 recites, *inter alia*, that during the operation process the original pixel to be processed and the adjacent (N-1) original pixels thereof are each multiplied by a predetermined coefficient and summed up, wherein the N is a natural number more than "3". Furthermore, a brightness level of each pixel of the information image is calculated in the low-pass-filter process, wherein the brightness level after the low-pass-filter process is obtained from the following formula:

$$D = k1 \cdot d(i) + k2 \cdot d(i+1) + k3 \cdot d(i+2) + k4 \cdot d(i-1) + k5 \cdot d(i-2),$$

wherein k1 to k5 are "0.2" and the brightness level of a target pixel is represented by d(i) and the brightness levels of the adjacent (N-1) pixels are respectively represented by at least d(i+1), d(i+2), d(i-1) and d(i-2).

For example, in the present invention the Low Pass Filter (LPF) process is executed for the original image wherein a target pixel is set in a certain line of the original image and regarding this target pixel and adjacent pixels thereof, a brightness level of each pixel is multiplied by a prescribed coefficient, for example. The multiplied brightness levels are summed up to obtain a new brightness level of the target pixel. Furthermore, the low-pass-filter process is executed under conditions that the tap number is "5" and the coefficients k1 to k5 are "0.2". When the brightness level of the target pixel is represented by d(i) and the brightness levels of the adjacent four pixels are respectively represented by d(i+1), d(i+2), d(i-1) and d(i-2), the brightness level D of the target pixel after the low-pass-filter process is obtained from the following formula.

$$D = k1 \cdot d(i) + k2 \cdot d(i+1) + K3 \cdot d(i+2) + k4 \cdot d(i-1) + k5 \cdot (i-2)$$

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(see present specification, pages 11-12).

Applicants respectfully submit that one of ordinary skill in the same art would <u>not</u> find it obvious to incorporate the teachings of Miyake into the thinning out process of Dotsubo.

For example, while both Miyake and Dotsubo may relate in some form to image processing, Miyake is quite different from the present invention and Dotsubo (for separate reasons) in that Miyake merely converts the low-resolution images into high-resolution images while the present invention, for example, converts the high-resolution images into low-resolution images.

In contrast with Miyake and the present invention, Dotsubo merely discloses converting the low-resolution images into the high-resolution images (see interpolating process of S307 in Fig. 20 of Dotsubo) and also converting the high-resolution images into the low-resolution images (see thinning out process of S309 in Fig. 20 of Dotsubo.

As such, even if one of the ordinary skill in the same art would find it obvious to incorporate the teachings of Miyake, which aims to convert the low-resolution images into high-resolution images, into Dotsubo (which applicants submit is not obvious), then it would be necessary to also combine the teaching relating to the interpolating process of Dotsubo (S307 in Fig. 20) rather than the thinning process (S309 in Fig. 20) as the Examiner suggests.

As a result, applicants respectfully submit that one of ordinary skill in the art would not find it obvious to combine the teaching of Miyake with Dotsubo's system as suggested by the Examiner.

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Furthermore, the Examiner concedes that Dotsubo fails to teach or suggest such a low-pass-filter (LPF) process and a brightness level after such LPF process, as set forth in claim 1. (see Office Action, page 4, last paragraph).

However, in an attempt to show this feature, the Examiner imports the newly cited reference Miyake.

Specifically, the Examiner alleges that Miyake discloses that during a low pass filter process the use of a window for the low pass filter is arranged in any shape, which is interpreted as any size, including five pixels consisting of one target and four adjacent. The Examiner further alleges that as for the limitation regarding coefficients k1-k5 being equal to "0.2", applicants' use of this is simply an averaging function used to calculate a brightness level. (see Office Action, page 5). Applicants' respectfully disagree with this allegation.

Applicants submit that Miyake fails to disclose the low-pass-filter process as set forth in the claimed invention. For example, Miyake merely discloses that a converting unit 105 converts the pixel value of the pixel of interest by filtering. Miyake further notes that Fig. 3 shows a representative smoothing filter which calculates the average value of nine pixels, i.e., the pixel of interest and its nearest neighbor pixels.

In other words, as shown in Fig. 3 of Miyake, after the converting means 105 (i.e., after the LPF process) the average value of only nine pixels, e.g., a 3x3 window, is calculated, instead of the target pixel d(i) and the adjacent (N-1) pixels respectively represented by at least d(i+1), d(i+2), d(i-1) and d(i-2) as set forth in the present invention. As such, Miyake at

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least fails to disclose a brightness level after the LPF process being obtained from the following formula:

$$D = k1 \bullet d(i) + k2 \bullet d(i+1) + k3 \bullet d(i+2) + k4 \bullet d(i-1) + k5 \bullet d(i-2).$$

Furthermore, Miyake fails to disclose having the original pixel and the adjacent (N-1) original pixels each multiplied by a predetermined coefficient, where N is more than 3. Miyake is completely silent about using a predetermined coefficient for each pixel. Instead, Miyake merely broadly refers to a product-sum operation wherein the "average value" of nine pixels is calculated. But, nowhere in Miyake is there any mention of a specific predetermined value for a coefficient. However, in contrast with Miyake, in the claimed invention the predetermined coefficient is set to "0.2".

Applicants respectfully submit that not only does the cited references fail to teach or suggest each and every feature as set forth in the claimed invention, but that one of ordinary skill in the art would not have been motivated to modify/combine the teachings of Dotsubo with Miyake to arrive at the claimed invention because there is no teaching or suggestion in Dotsubo or Miyake regarding how or why one would modify such a method to arrive at the claimed invention.

As such, applicants respectfully submit that Miyake fails to make up for the deficiencies found in Dotsubo.

Applicants respectfully submit that neither Dotsubo nor Miyake, taken singularly or in combination, (assuming these teachings may be combined, which applicant do not admit) teach or suggest the low-pass-filter process as claimed.

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To establish a *prima facie* case of Obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure. *In re Vaeck,* 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). See MPEP 706.02(j).

Applicants respectfully submit that the combination of Dotsubo with Miyake fails to teach or suggest each and every feature as set forth in the claimed invention.

Applicants respectfully submit that independent claim 1 is allowable over the combination of Dotsubo and Miyake for at least the reasons noted above.

As for each of the dependent claims not particularly discussed above, these claims are also allowable for at least the reasons set forth above regarding their corresponding independent claims, and/or for the further features claimed therein.

Accordingly, withdrawal of the rejection of claims 1, 3, 4 and 6-14 under 35 U.S.C. §103(a) is respectfully requested.

Conclusion

In view of the foregoing, Applicants respectfully submit that the application is in condition for allowance. Favorable reconsideration and prompt allowance are earnestly solicited.

Should the Examiner believe that anything further would be desirable to place this application in better condition for allowance, the Examiner is invited to contact Carolyn T. Baumgardner (Reg. No. 41,345) at (703) 205-8000 **to schedule a Personal Interview**.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment from or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §1.16 or under 37 C.F.R. §1.17; particularly, the extension of time fees.

Respectfully submitted,

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By   _____

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